

REMARKS

Reconsideration and allowance of the above-identified application is respectfully requested. Claims 1 and 4 have been amended, and claim 14 has been deleted. No new matter has been added, and claims 1-13, and 15-37 remain pending.

Double Patenting

Claims 1-37 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,418,158 issued to Vishwanath et al., hereinafter "Vishwanath". The Examiner also cites U.S. Patent No. 6,097,336 issued to Louis A. Stilp, hereinafter "Stilp" in the double patenting rejection discussion, however, this is believed to be a typographical error, and the reference actually is in regards to the Vishwanath patent. There is neither a common inventor or assignee in both the current application and the Stilp Patent, therefore a non-statutory double patenting rejection based upon the Stilp Patent appears incorrect.

The Applicants have submitted a Terminal Disclaimer in compliance with 37 C.F.R. 1.321(c) to overcome the rejection based upon the Vishwanath Patent, and respectfully requests the double patenting rejection be withdrawn.

Claim Rejections Under 35 U.S.C. 112

Claims 1 through 3, 18 and 20, stand rejected under 35 U.S.C. 112, first paragraph, as the body of the claim provides no support for the method of the claim preamble.

The present invention enables synchronization of communications in a wireless communication system by receiving a burst within the space of a single frame, where the burst includes a composite waveform, specifically an up-chirp and down-chirp signal simultaneously. Independent claim 1, as amended, recites, among other things, receiving this

burst and estimating a frequency and timing offset of the composite waveform whereby synchronization is achieved.

As amended, Applicants' respectfully submit that claim 1 provides support for the method for enabling synchronization of a communications terminal in a wireless communication system as recited in the preamble of claim 1. The step of estimating a frequency offset and a timing offset of the composite waveform as received into said receiver of dependent claims 4 and 14 have been incorporated into independent claim 1. Claim 4 has been amended to claim when the estimation of the frequency and timing offset occurs, and claim 14 has been deleted.

The amendment to independent claim 1 does not introduce new matter, but serves to provide support for the method for enabling synchronization recited in the preamble of claim 1. For these reasons, Applicants submit that independent claim 1, and associated dependent claims 18 and 20, should be in condition for allowance. Accordingly, withdrawal of the rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. 102

Claims 1 through 4, and 7, stand rejected under 35 U.S.C. 102(b) as being anticipated by WO 96/02990, issued to Nyström et al., hereinafter "Nyström". Applicants respectfully traverse the rejections for the reasons discussed below.

Regarding independent claim 1, the Applicants respectfully submit that the Nyström Patent discloses the transmission of a single chirp signal per individual frame (see page 5, lines 16-18). As taught by the Nyström Patent, the transmission of two chirps requires two separate frames. In the Nyström Patent, an up-chirp signal is provided in one synchronization frame, and in an adjacent synchronization frame, a down-chirp signal is provided (see page 5,

lines 18-23). The detection of the chirp signal is achieved by using a comparison of the received signal and stored bit patterns (see page 6, lines 1-5).

In contrast, the Applicants' claim a method and system which recognizes that the two chirps are orthogonal and can be transmitted simultaneously within the span of one frame to reduce sync overhead by 50%. Applicants' amended independent claim 1 includes a method to receive such a composite burst, and determine a frequency and timing offset in an acquisition section of a mobile terminal. The Applicants' claim receiving a burst which contains a composite waveform, where the composite waveform includes two or more component waveforms, specifically a dual-chirp waveform. Applicants define the "composite" waveform as including an up-chirp component, and a down-chirp component, in the application (see page 8, lines 33-36). The "burst" of claim 1, which contains the composite waveform, or simultaneous up-chirp and down-chirp waveforms, is shown as falling within the span of a single frame (see page 43, lines 22-29, and Applicants' Fig. 8).

The Nyström Patent does not teach or disclose a dual-chirp waveform within the span of a single frame. Each frame of the Nyström Patent includes no more than one chirp. Specifically, the Nyström Patent teaches frames that "each contain a chirp signal" (page 5, lines 16-18), not composite waveforms, such as multiple chirp signals and dual-chirp waveforms.

For all these reasons, Applicants submit that the Nyström Patent does not teach or suggest every limitation of independent claim 1 as amended, and that this claim should be in condition for allowance. Accordingly, withdrawal of the rejection is respectfully requested. Also, as dependent claims 2, 3, 4 and 7 depend from amended claim 1, it is respectfully submitted that these claims are also in condition for allowance for at least the same reasons as those noted above for claim 1.

Allowable Subject Matter


Applicants appreciate the allowance of subject matter claimed in independent claim 34, and dependent claims 36-37, which for the reasons stated above, are now also in condition for allowance.

CONCLUSION

For all the above reasons, the Applicants respectfully submit that independent claims 1, 21 and 34, and their corresponding dependent claims should be allowable over the Vishwanath and Nyström patents. Accordingly, it is believed that the application is in condition for allowance and notice to this effect is respectfully requested.

If, however, the Examiner believes that there are any unresolved issues in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. John T. Whelan, Esquire at telephone number (301) 428-7172, so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully Submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on June 20, 2003.

Signed:   
Ginger Fogle

**“Version With Markings To Show Changes Made”**

Claims 1, 4 and 14 have been amended as follows:

1. (Once Amended) A method for enabling synchronization of a communications terminal in a wireless communication system comprising:

receiving a burst at a receiver of the communications terminal, the burst containing a composite waveform including two or more component waveforms, wherein each of the two or more waveforms has a known frequency variation throughout the burst; and

estimating a frequency offset and a timing offset of said composite waveform as received into said receiver whereby said synchronization of said communications terminal is achieved.

4. (Once Amended) The method of Claim 3 wherein said estimating said frequency offset and said timing offset of said composite waveform occurs after both of said detecting steps[further comprising estimating, after both of said detecting steps, a frequency offset and a timing offset of said composite waveform as received into said receiver].

14. Please cancel claim 14.